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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,230	07/21/2000	Takayoshi Hiraga	0670-248	1846

7590

07/30/2003

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EXAMINER

CHANG, AUDREY Y.

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/582,230

Applicant(s)

HIRAGA ET AL.

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on May 12/2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on May 12, 2003, which has been entered as paper number 18.
- By this amendment, the applicant has canceled claims 3-5 and 11-13 and has newly added claims 20-24.
- Claims 20-24 remain pending in this application.

### *Claim Objections*

1. **Claim 21 is objected to because of the following informalities:** The phrase "a longer axis direction of a far field pattern of said real laser light source" recited in claim 21 appears to be vague, confusing and indefinite since it is not clear what is considered as the *pattern* of the laser light source. Also it is not clear what is considered here as the "*column direction of the hologram patterns*" recited. It is not clear how does this column direction relate to the fringes pattern of the hologram, or what does it mean by "aligning" the column direction with the longer axis direction of the light pattern. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2872

2. **Claims 20, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Takeda et al (PN. 5,828,643) in view of the patents issued to Tanaka et al (PN. 5,986,779).**

**Takeda et al** teaches an *optical pickup head apparatus* that is comprised of a *single real laser light source* (11, Figures 1 or 15), a *holographic optical element* (12 or 22) serves as the hologram member for diffracting the light emitted from the light source and an *objective lens* (14) for focusing the light to form a plurality of light spots on a *laser disk* (15) serves as the *recording medium*, (please see Figures 1 and 15). **Takeda et al** teaches that the holographic optical element (12 or 22) has a plurality of diffraction grating patterns (12A, 12B or 22A, 22B, 22C) such that the light generated from the real light source is diffracted into diffraction orders such that the different diffraction order beams appear to be generated by a *plurality of virtual light sources* (A<sub>+</sub>, A<sub>-</sub>, B<sub>+</sub>, B<sub>-</sub> as in Figure 2, column 4). The laser light source is a semiconductor laser light source.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the hologram/diffraction grating patterns are designed to correct the aberrations of the optical elements in the optical pickup device. However designing and recording holographic optical element having diffraction grating to correct aberrations of other optical elements in the device are extremely well known and standard practice in the art as demonstrated by the teachings of Tanaka et al. **Tanaka et al** teaches an optical pickup apparatus having a hologram and objective lens wherein the hologram can be deigned to correct the aberrations introduced by the optical system including the objective lens, (please see column 1, lines 35-45). It would then have been obvious to one skilled in the art to apply the teachings of Tanaka et al to modify the holographic optical element of Takeda et al to also correct the aberrations generated by the optical system for the benefit of enhancing the quality of the light spots formed on the recording medium. It is known in the art that the standard practice for correcting the

Art Unit: 2872

aberrations is achieved by making the hologram patterns having aberrations that compensate (i.e. inverse to) the aberrations of the optical system.

With regard to claim 22, Takeda et al teaches that the holographic patterns are aligned with the axis of the light pattern of the laser light.

With regard to claim 23, Takeda et al teaches that the holographic optical element (22) may comprise relief grating structure that works as a phase grating, with blazed grooves, (please see column 7, lines 20-25, Figures 16a, 16c, 23a and 23b). In general the intensity of light passes through the holographic optical element that is not used for light spot formation (i.e. the diffracted light with higher diffraction orders) is reduced as compared to the original intensity of the light from the laser light source and as compared to the diffraction light used for light spot formation.

3. **Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Takeda et al and Tanaka et al as applied to claim 20 above, and further in view of the patent issued to Harris (PN. 5,422,753).**

The *optical pickup head apparatus* taught by Takeda et al in combination with the teachings of Tanaka et al as described for claim 20 above have met all the limitations of the claims with the exception that these references do not teach explicitly that the non-diffraction light from the light source via the holographic optical element has a uniform intensity. However it is known in the art that a holographic diffraction grating may be designed to modulate the intensity of light beam. **Harris** in the same filed of endeavor teaches a *binary diffraction grating having surface relief phase grating structure* such that the *non-diffraction light portion* of the light passes it has a *uniform intensity*, (please see Figure 2A and column 6, lines 1-14 and column 8, lines 17-26). It would then have been obvious to one skilled in the art to modify the holographic optical element of Takeda et al to have a diffraction grating pattern that makes

Art Unit: 2872

the non-diffracted light having uniform intensity for the benefit of producing light spot with uniform intensity which improves the quality of data recording and reading on the recording medium.

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Harris (PN. 5,422,753).

Harris teaches a scanning optical device that is comprised of a *single real laser light source* (12), an *optical section* (18) that serves as the light forming element for forming a light spot on a *recording medium* (22) and a *binary diffractive optical element* (20) for controlling the beam *intensity* of the light on the recording medium, (please see Figure 2, columns 5-6). Harris teaches that the binary diffractive structure has a relief phase grating structure such that it provides a uniform intensity for the non-diffracted light that forms the light spot, (please see column 8).

This reference has met all the limitations of the claims with the exception that it does teach explicitly that the binary diffractive structure is a hologram member. However, by definition a hologram member has a diffractive structure and the only difference for this binary diffractive optical structure to be a hologram member or not is if it is made *holographically or not*. But it is well known in the art to make diffractive structure holographically, and the *method* for making the binary diffractive optical structure does not distinguish the function of the binary diffractive structure in controlling the intensity of the light spot. Such modification or difference would therefore have been considered as an obvious matter of design choice to one skilled in the art in choosing a method for making the element and with no patentable distinction or given no patentable weight. Although Harris teaches that the binary diffractive optical element is provided after the light passes through the beam forming optical section, however this function of the diffractive structure for controlling the beam intensity does not change by the order of the arrangement. Such modification is therefore obvious to one skilled in the art since it only involves rearranging parts in the device.

Art Unit: 2872

This reference also does not teach explicitly that the device is an optical pickup device. However, this recitation has not been given patentable weight because it has been held that a preamble is denied the effect of limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478, (CCPA 1951). In this case the servo beam spot formation is fully disclosed by the Harris reference.

### *Response to Arguments*

Applicant's arguments filed on May 12, 2003 have been fully considered but they are not persuasive. The newly submitted claims have been fully considered and they are rejected for the reasons stated above.

Applicant's arguments are mainly drawn to the newly submitted claims and they have been fully addressed in the paragraphs above.

### *Conclusion*

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2872

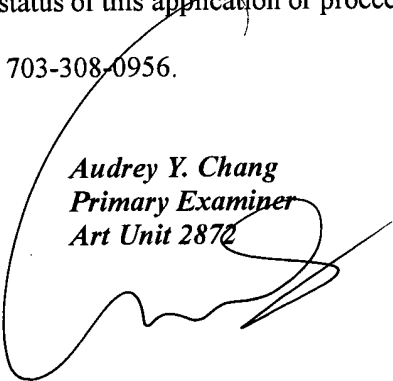
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Audrey Y. Chang*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.  
July 22, 2003